AD-A043 167 DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA F/G 5/1
AN APPROACH TO INTERFACE MANAGEMENT.(U)
MAY 77 R H LISON

UNCLASSIFIED NL

1 OF 1
ADA043167

END
DATE FILMED
9-77
DDC

AD-A043167

DEFENSE SYSTEMS MANAGEMENT COLLEGE

(1)

PROGRAM MANAGEMENT COURSE
INDIVIDUAL STUDY PROGRAM

AN APPROACH TO INTERFACE MANAGEMENT

STUDY PROJECT REPORT
PMC 77-1

Robert Henry Lison
Major USAF

FORT BELVOIR, VIRGINIA 22060

AN APPROACH TO INTERFACE MANAGEMENT

Individual Study Program

Study Project Report

Prepared as a Formal Report

Defense Systems Management College

Program Management Course

Class 77-1

by

Robert Henry Lison
Major USAF

May 1977

Study Project Advisor
Mr. Wayne Schmidt

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) AN APPROACH TO INTERFACE MANAGEMENT	5. TYPE OF REPORT & PERIOD COVERED Student Project Report 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) ROBERT H. LISON	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060	12. REPORT DATE 77-1 13. NUMBER OF PAGES 32
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

UNLIMITED

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

SEE ATTACHED SHEET

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

SEE ATTACHED SHEET

ACCESSION for
NTIS White Section ✓
DDC Buff Section ☐
UNANNOUNCED ☐
JUSTIFICATION
BY
DISTRIBUTION/AVAILABILITY CODES
Dist. AVAIL. and/or SPECIAL
A

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: AN APPROACH TO INTERFACE MANAGEMENT

STUDY PROJECT GOALS:

To breakdown the business of interface management into some fundamental considerations so that the reader might judge for himself their applicability to his own interface requirements.

STUDY REPORT ABSTRACT:

This report emphasizes the importance of interface management in today's systems acquisition environment. The impact of organizational relationships, both internal and external, is presented. The "Tiger Team" approach is discussed along with multiple program direction, interface program plans, joint funding and reporting. The roles of the contractor and the government are examined.

Interface management is seen to require the essential elements of program management itself. The traditional concept of the physical/functional interface is expanded to include the concept of an interface management program. Finally, an interface management model is presented to illustrate the total program nature of the approach and to point out the three distinctive levels of control present in most interface programs.

SUBJECT DESCRIPTORS:

INTERFACE MANAGEMENT

NAME, RANK, SERVICE	CLASS	DATE
ROBERT H. LISON, Major, USAF	PMC 77-1	May 1977

EXECUTIVE SUMMARY

More than ever, today's program managers are confronted with complex interface problems. In an environment of scarce resources and multi-national undertakings, managers have less control over many of the elements of their systems. Increased emphasis on joint-service programs has raised the level of interorganizational complexity associated with weapons integration. Sentiment against the proliferation of system peculiar equipment has served to make commonality an important program consideration.

All these factors tend to make interface management a vital cog in the overall program management process. This report introduces some fundamental considerations of what is involved in interface management. It attempts to go beyond the classical approach of form, fit and functional integration. It discusses important interactions up and down the bureaucratic chain of command, across interfacing agencies, and among members of the government-contractor team. It evolves the concept that interface management is essentially program management of an interface system.

Finally, a conceptual model of an interface program is developed to graphically define where such a program can be found, and to introduce three distinctive levels of control that are usually present. It is the

author's belief that such a simplistic model may be of general use to program managers as they scope out their integration tasks and formulate an interface management approach.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Purpose

This report was originally intended to present a comprehensive approach to interface management. This writer realized early that a comprehensive approach might have limited value to other readers. It appeared to me that the relatively small amount of specific guidance published on the subject may be a blessing (intended or not) to the interface manager. Certainly, the problems associated with managing different interfaces could be as varied as the different systems themselves. What might be of value then, would be those elements of any interface management approach that could be viewed as applicable to more than one interface problem. With this in mind, the purpose of this report became one of breaking down the business of interface management into some fundamental considerations so the reader might judge for himself their applicability to his own interfacing requirements.

This report is not intended to be a substitute for Chapter 15 of AFSC Pamphlet 800-3 (1:15-1) which the author considers to be a good guide to interface management. Specifically, the principles and techniques for documentation and control of physical and functional interfaces as set forth in 800-3 will not be repeated herein, though I

consider them to be fundamental to most interface management approaches. Rather, the purpose of this report is to go beyond the focus of 800-3 and include other considerations in addition to those technical problems (form, fit and function) historically associated with interface management.

In my view, the lessons of prior programs involving the management of complex technical interfaces have been well learned. I would say that the present body of interface management guidance has placed a good handle on the type of physical and functional interface problem that can be illustrated conceptually by Figure 1. My purpose is to suggest that a program manager must consider other aspects of his interface management problem in addition to the important physical and functional compatibility issue. These other aspects will be discussed in the body of this report. In the final analysis, I will attempt to modify the graphics of Figure 1 to include the concept of these additional considerations.

Approach

This report is a result of integrating my personal experiences as the F-15 Armament Project Manager with a review of selected F-15 interface documentation, other relevant reading material, and interviews with two Air Force program managers assigned to joint service missile programs.

An analysis of F-15/Air-to-Air missile experiences was synthesized with many of the fundamental principles of program management presented at the Defense Systems Management College in order to generalize my

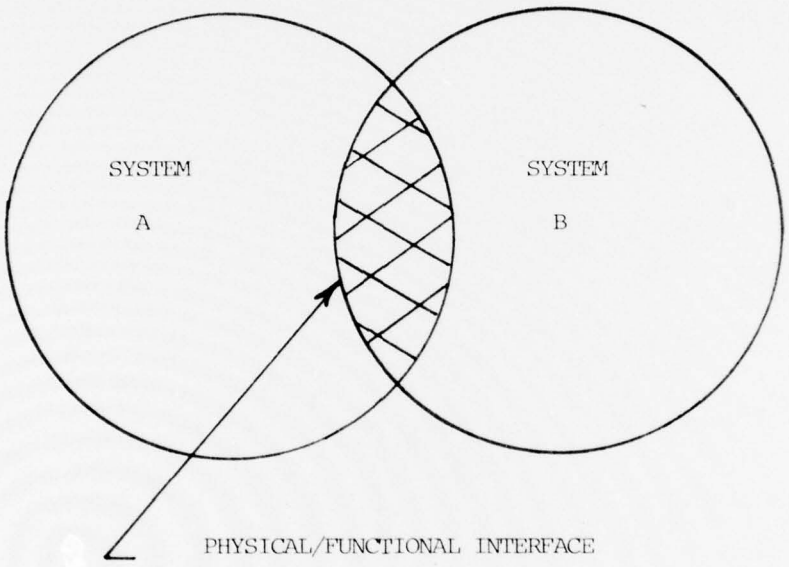

FIGURE - 1

observations. Whenever specific examples were required they were drawn from actual situations in the F-15/Air-to-Air missile integration programs.

CHAPTER II

WHY INTERFACE MANAGEMENT?

The Systems Acquisition Environment

Within the Executive Branch of Government, and particularly within the Department of Defense (DOD), the program management approach to systems acquisition is a matter of established policy. Program managers (especially those in charge of major weapons acquisition programs within the DOD) are given broad areas of "responsibility, authority and accountability for program objectives." (2:5) Still, the amount of actual control a program manager can exercise over some elements vital to his program tends to vary both in scope and degree. This is especially true today when scarce resources and rising costs are placing constraints such as standardization, interoperability, and the use of existing or commercial hardware and software on the program manager's choice of alternatives.

As a result, today's weapon system program manager rarely has total control over all of the elements that make up his system. He is forced to share control on some vital elements with other program managers. These other managers can be in the same service, a different service, a different agency or even a different country. This is where interface management becomes an extremely important part of program management. It

can and must provide the program manager with a means of wresting sufficient control from the other guy's program.

But, what is sufficient? Is it sufficient to control the technical or hardware interfaces to the point of insuring that they are compatible? To what extent is the balance of cost, schedule and technical performance in one program affected by the balance of those same factors in another program with which it must interface? The program manager's answers to these questions will go a long way toward determining the amount of emphasis he will place on interface management. Given enough attention, interface management can be the key to program success. Neglected, it can be the reason for a program's demise.

Organizational Relationships

The interface management approach or technique that a program manager chooses can be greatly influenced by the organizational relationships imposed on his situation. His basic objective will always be to gain control over those parts of another manager's program that are critical to his own success. The means of gaining control available to a program manager can vary widely with the situation.

For example, a program manager may be given the opportunity to apply a subsystem approach to his interface problem. This would have been the case with the Aim-82 short range missile that was to have been developed as a "subsystem" for the Air Force's F-15 fighter. Organizationally,

the undertaking was started as a program within a program with the Aim-82 program manager working for the F-15 program manager. He and his staff were physically located within the F-15 program office. With this kind of internalized approach it would not be too much to expect that the aircraft manager would maximize the amount of his control over the missile program.

On the other hand, when the Aim-82 program was denied by OSD in favor of an improved version of the Navy's sidewinder missile, the Aim-9L, the situation changed dramatically. The Aim-9L entered development as a joint Navy-Air Force undertaking with the Navy as the executive service. A joint program office was formed at Naval Air Systems Command, Washington, D.C., with a Navy program manager and an Air Force deputy program manager. The Air Force deputy reported to Air Force Systems Command, Andrews AFB, MD., through the Armament Development and Test Center, Eglin AFB, FL. Furthermore, Aim-9L program direction required the Air Force manager to develop his missile to be compatible with the F-4E aircraft only, and to provide interface data to "other" Air Force user aircraft. Clearly, for the F-15 program manager, sitting in his office at Aeronautical Systems Division, Dayton, Ohio, there was a different set of choices available for managing the interface between the F-15 and Aim-9L than had existed with the Aim-82.

Even when faced with more complex interorganizational relationships and less opportunities for direct control, a program manager should

not change his basic objective of gaining control over those parts of another program that are critical to his success. At times he may be tempted to take the approach that the other system is outside of his own system boundaries and beyond the scope of his responsibility - the "government furnished equipment" attitude or syndrome. He should resist the temptation. If the other weapon is indeed important to his own system's effectiveness, ignoring it is inviting disaster. Organizational relationships should only impact a program manager's interface management approaches, not his objectives.

Organizing for Interface Management

The program manager who has evaluated his organizational relationships with other programs and has narrowed his choice of interface management approaches should turn to structuring his own organization to match his final choice. The "subsystem" approach has already been mentioned. Here the interface task would be viewed as critical to the program's success. The objective would be to establish a nearly self-sufficient project within a program office in order to centralize and intensify the interface management process. The expected result would be maximum integration of the planning, directing and controlling processes for both programs. A disadvantage would be the complexity and size of the resultant program office. We have already said that in today's scarce resource environment the program manager will likely be forced to give up some control because of desired commonality of weapons. It

is also true that today's manager is being forced to share his human resources with other managers.

For these reasons, the pragmatic program manager will likely consider a small interface project group, a single interface manager, or a direct integration of the interface function into the existing program structure. The matrix approach embodied in the use of a small project group or single manager would be applied according to the complexity of the interface task and the desired intensity of management. Both would have the advantage of focusing responsibility for interfaces within a single element while requiring only small commitments of human resources. The program manager who chooses to leave the interface job to his functional specialists without creating a responsible focal point should not be anticipating any problems or uncertainties. His assessment of the interface job to be done should have concluded that a single function such as technical integration or compatibility testing is all that is required. Usually, this approach will be taken when the item to be integrated is off-the-shelf or an inventory item.

A program manager should avoid over-simplifying interface problems. One of the most fertile areas for generating unexpected trouble can be the interface with an off-the-shelf system. For example, fighter aircraft being built today are having to carry and deploy short range missiles such as earlier Aim-9 series that date back to the 1950's and 1960's. Problems are continuously popping up because these vintage weapons were

not designed for or tested to the severe carriage environment which exists on the latest high performance aircraft.

Joint Service Programs

Gaining control over parts of another manager's program becomes much more difficult when that other program is a joint service undertaking. The reason can be explained in two words, "decreased flexibility." This is especially true if the other service is the executor of the program. What it boils down to, is that your own service counterpart in a joint program office can only be responsive to your needs to the degree that the executive service concurs or is not affected.

A program manager must be aware of the uphill battle his own service counterpart is waging. The executive service will likely have different requirements. If the participating service has peculiar needs they will have to push loudly for consideration. There may be times when a program manager has to throw the weight of his own program behind a requirement in order to force its consideration. All these activities must take place within the context of formal interservice agreements which are quite necessary and do protect individual service needs but further decrease the flexibility of response across the interface.

The "Tiger Team" Approach

At some point in a program the interface manager may be hit with an unexpected problem of serious consequence which receives immediate and

high level visability and requires quick resolution. The problem may be one of those "unknown-unknowns" (3:15) that carry with them the potential for design changes and adverse cost and schedule impact. This type of problem can occur late in the development and test phase or even in production or operational deployment phase. Though occurring late, its "unknown" nature may require going back to fundamental relationships addressed much earlier in the program.

An example of this type of interface problem took place in 1976 and affected both the F-15 and the Aim-7F programs. During a joint Follow-on Operational Test and Evaluation (FOT&E) program in the spring of that year, a separation problem was discovered. The problem came after years of development and tests that had included hundreds of hours of wind tunnel work, simulation runs and analytical effort, along with over eighty actual firings off of test aircraft. It occurred in a part of the envelope that had not been considered severe for separation purposes. Still, it happened. What's more, it happened at a time when Aim-7F production funding was being examined before Congress. It's occurrence raised questions of compatibility and operational suitability of the F-15/Aim-7F weapon combination at the worst possible time of the year.

Interface problems in the context just described require an extraordinary approach. The "Tiger Team" is such an approach. It can be extremely effective, though it should not be overused because it consumes resources at a heavy rate. The team is made up of experts from key

organizatons involved in the interface. In the case of the F-15 problem, the team was composed of representatives of both contractors (aircraft and missile) and both program offices, with additional participation from the test center and the using command. In some cases, outside help such as from government laboratories may be required.

To be effective a tiger team must be chartered by and have the absolute support of, top management. Participants should be given authority to commit resources toward a solution. An action plan is formulated early in the life of a tiger team. Because of the uncertainties usually present the plan may be incremental in nature. Activities tend to be structured in short, intensive packages with milestones spaced only two or three weeks apart. The team meets at least that often to evaluate past results and refine future actions. When team members are not meeting with each other, daily communication is maintained to assure that all activities are on course.

This intensive activity is maintained throughout the critical phases required to solve the problem. Some problems may require only a few weeks of tiger team effort, others may take six months to a year to resolve. The same level of intensity is maintained during the time that the team is engaged. If the intensity begins to drop off, it should be taken as a sign that the tiger team approach may no longer be required. Recognizing that tiger teams are a costly use of resources, returning the problem to a more normal course of doing business should be a frequent

consideration as events unfold. A tiger team's number one objective should be to work itself out of existence.

CHAPTER III

PROGRAM CONTROL OF AN INTERFACE

Multiple Program Direction

Program direction as contained in Decision Coordinating Papers (DCP's), Program Management Directives (PMD's) and other formal directing documents, is the starting point for scoping out an interface management task. Individual program responsibilities as well as responsibilities across the interface should be completely, unambiguously and consistantly defined in each program's directives. Interface managers must pay almost as close attention to the direction applied to the program with which they are interfacing as they pay to their own. Inconsistencies should not be tolerated. Higher headquarters must be made aware of program interrelationships so that they can avoid unilateral changes in direction to one program if the other is affected. Desired changes in program direction should be coordinated and implemented simultaneously down through both program channels in order to preserve responsiveness across the program interfaces. Program managers must recognize that they have a responsibility to educate the bureaucracy on certain program interrelationships. Good program direction is a two-way street.

Interface Program Plans

Once a manager understands his interface responsibilities as

contained in his program direction, he is ready to develop an interface plan. Good planning is at least as important to interface management as it is to any other management form. An interface plan is a communication vehicle. It communicates responsibilities for actions. It describes the actions required along with the sequential and interdependent relationships involved. When all the actions in an interface plan are completed and added together they should result in the successful integration of two or more interfacing systems. All parties who have a role in interface management must have access to the plan. In cases where direct involvement is limited, the interface program plan may be the primary means of communicating actions and requirements across responsible agencies.

The form that an interface plan can take will depend on the interface approach selected. For example, where the government has opted to be the integrator, the plan may be an adjunct to a memorandum of agreement between the program offices that will be sharing the responsibility. Or a single program office may have total integration responsibility which it may retain or pass on to a prime, integrating contractor. In the former case the integration plan might be a part of the overall program management plan, while in the latter, it may take the form of a contractual document. Certainly, there are other forms and approaches or combinations that can be used under varying circumstances. Whatever form the plan takes however, its utility will be determined by its dissemination and relevancy. An interface program plan must be made available to everyone involved and must be kept up to date.

Joint Funding

Funding arrangements for interface management should be determined as early as possible in a program. Early agreements as to funding responsibility are essential to developing a sound funding plan. The distribution of funding responsibility will vary greatly from one interface program to another. Clear program direction as mentioned earlier will go a long way toward defining who pays for what during the development and test activities involving two or more systems.

In the real world of program management, direction may not always be clear and concise. A good working relationship between the program managers involved becomes especially critical when program direction is vague. If arguments over who is suppose to pay for what are allowed to exist, usually nothing gets done and both sides suffer. Many times it is wiser to pay, if you have the funds, even though a case could be made for the other program's having the responsibility. The other program manager may not have the money, so hanging the responsibility around his neck isn't going to accomplish your objectives. On the other hand, with a good working relationship, in an atmosphere of give and take according to who has the resources, both program managers could reap benefits in the long run.

Where a specific program is in its life cycle can be a determinant of funding responsibility. For example, early in the F-15 program a design change to the Aim-7F missile autopilot was required in order to

provide missile stability during separation from the aircraft. With the F-15 in the early stages of development, an agreement with the Aim-7F joint program office was made whereby F-15 funds were used for the missile research and development effort and Aim-7F funds were used to implement the change in production. Several years later an analogous situation occurred which required an additional missile autopilot modification. The second time around the Aim-7F joint program office picked up most of the costs, with the F-15 program funding only the flight test portion of the effort. In the first instance the F-15 had been trailing the Aim-7F in development, in the second case, the F-15 was leading the Aim-7F into the operational inventory. The shift in relative positions between the two programs precipitated a different sharing arrangement on funding responsibility.

Another factor influencing joint funding arrangements is precedent. A program manager who identifies his test and development hardware needs early can take advantage of some funding precedents in order to ease his dollar burden. Identifying specific quantities of air-to-air missiles for testing as an example, allows the requirements to be included in the missile procurement and allocation planning. Once an allocation has been made to a specific aircraft test program the dollars come out of missile procurement funds and the aircraft program manager need only fund for test-peculiar hardware (i.e. telemetry packs, etc .).

Program Reporting

When reporting the status of his program to his superiors and to the Congress, today's program manager must "demonstrate a knowledge of the program in the widest context." (3:6) If his program includes one or more interfaces with other major weapons acquisition programs, that context will necessarily include a good deal of the other program's status. An aircraft program manager, for example, is expected to know the status of his primary air-to-air missile even when another service is developing it. Often times, Service, OSD and Congressional leaders will receive separate briefings on interfacing programs at close intervals. They will likely be comparing notes. Especially if joint testing is in progress and both program managers are reporting results. Under these conditions it is important for interface management relationships to include a means of exchanging program status information, and for coordinating what is to be reported on up the chain of command. In short, a program manager's ability to instill confidence in his superiors concerning his own program may be extended into program areas concerning an interfacing program if he has intimate knowledge of the latter at his command. There are times when program managers must help each other in this way, especially if one has more clout or is blessed with more streamlined reporting channels.

CHAPTER IV

THE GOVERNMENT - CONTRACTOR TEAM

The Role of the Contractor

Given several alternative approaches, what role in interface management should a program manager allocate to his contractor(s)? In chapter II we saw how factors such as the acquisition environment and inter-organizational relationships influence how a program manager might structure his own organization to do the job. Many of the same factors will influence the role that contractors should play on the interface management team. The prudent interface manager will tailor his approach to his particular situation. If he knows where the strengths and weaknesses lie, he can build on the former and work around the latter. If the bulk of the system expertise has been retained by the contractor, as an example, and the government has acted primarily as a monitor, then strong consideration should be given to making the contractor the integrating agent. On the other hand, where the government may have been the designer and the contractor primarily the producer, a government integrator/contractor supporter type role might be called for.

The elements of risk and uncertainty can play a large part in determining roles on the interface team. When one side of the interface

is a stable, mature and a baselined system, the government may accept the low risk of providing only interface data to the contractor developing the other side while requiring that he be compatible with the mature system as specified by the data. On the other hand, if both sides of the interface are under development and subject to high risk conditions, the government may elect to pay one or more contractors to assume the responsibility (and the risk) of making the systems compatible. The contractor who is thus given total system responsibility for interfacing with the other system will naturally price out his effort to manage the interface and will include contingencies for the risks involved.

The Associate Contract Approach

In Chapter II, under organizational relationships, we discussed how a program manager could maximize his control over a critical interface by organizing as though the other program were a subsystem of his own. We also discussed how, in today's scare resource environment, most program managers will not enjoy such an opportunity. There exists however, an alternative that provides some of the controls inherent to the subsystem approach. The program manager, by passing Total System Performance Responsibility (TSPR) to his prime contractor can precipitate an associate contractual relationship between the contractors themselves. If the contractor having TSPR enters into a direct contract with the contractor(s) responsible for the system to be interfaced, a great deal of the control that characterizes the subsystem approach can be realized. This is especially true when both sides of the interface are under development.

A very important aspect of an associate contractor relationship is the resultant ability to go beyond the specifications. With expertise from both sides of the interface interacting, sensitivity analyses and trade-offs can be made with much more freedom and at lower levels of specificity where that flexibility exists. This can lead to a sounder integration effort that not only meets performance and form, fit and function re-requirments, but leaves behind a level of intersystem understanding that would not be achieved otherwise (in this regard, it takes on the appearance of a prime - subcontractor relationship). This understanding can become invaluable later if unforseen compatibility problems arise or when one or both sides of the interface are subjected to engineering changes.

In the case of integrating a missile with an aircraft, the associate contract approach provides a unique opportunity for the missile contractor to influence the aircraft design. It also provides for system compatibility problems to be solved in the most cost effective manner by considering solutions on either or both sides of the interface. As an example, difficult aircraft - missile separation problems were solved on the F-15 aircraft by a combination of aircraft flow field and launcher modifications along with an Aim-7F missile autopilot change.

The Role of the Government

The contractor team created through associate contracts is most effective when the government managers support their efforts in a facilitative role. Through such means as authorizing direct exchange of

program information and data among contractors and by providing government furnished equipment channels for the exchange of hardware, the military program managers enhance the flexibility and responsiveness of the contractor team.

The facilitative role of government managers should not be mistaken for non-participation. In fact, the role requires a high degree of participation. The objective is to provide for smooth and easy flow of information, data and hardware between interfacing contractors. This requires that the government managers establish purchasing arrangements in several directions. To illustrate this point, Figure 2 shows the arrangements utilized in the F-15/Aim-7F integration program.

In addition to the facilitative role, each individual program manager will participate in the interface program through his prime contract at least to the same degree that he participates in the management of his basic program. Also, the most important role of the government manager includes those activities described earlier. That is, he provides the environment for interface management. By communicating, educating and interacting with the bureaucracy, he ensures that the goals of the interface team are consistent with overall program and higher order goals, and that resources are available and committable to the task.

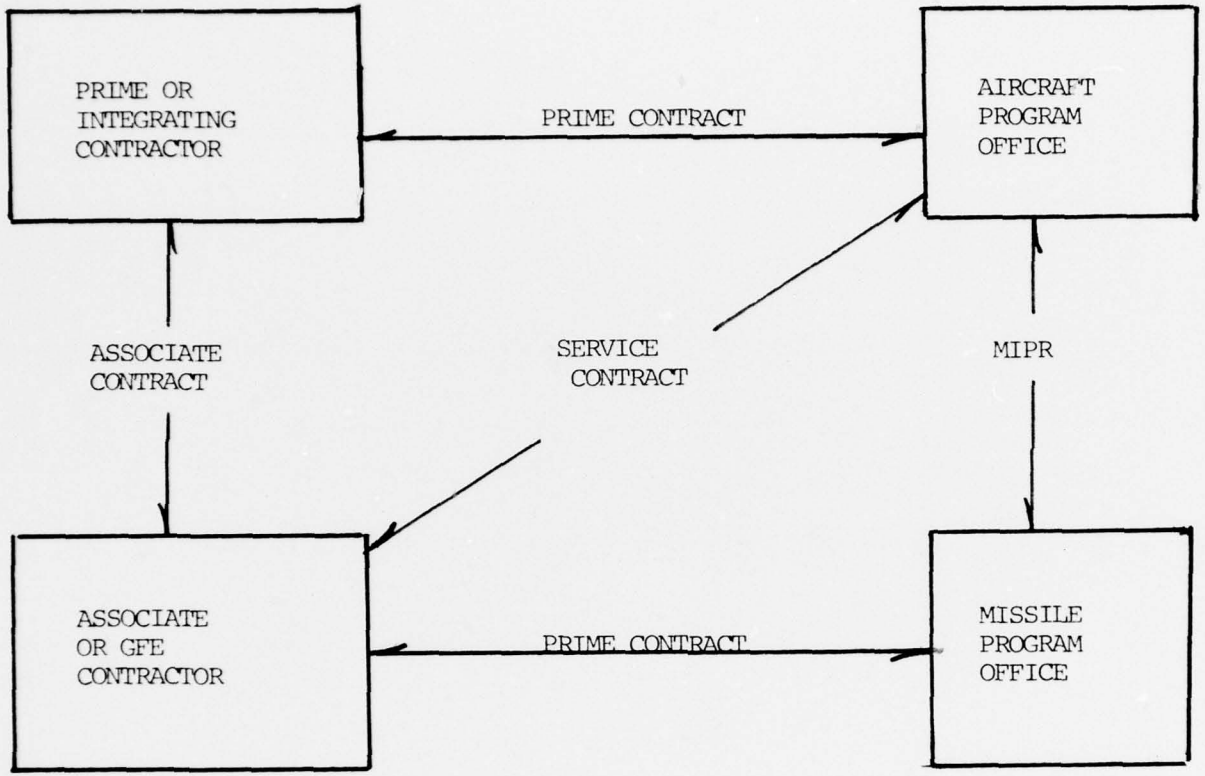

FIGURE - 2

SOME FACILITATING ARRANGEMENTS

CHAPTER V

THE INTERFACE MANAGEMENT PROGRAM

Summary

Most program managers continue to be faced with complex interface problems. Today's environment of scarce resources and multi-national undertakings rarely affords the modern manager control over all of the elements of his system. Emphasis on joint-service developments has increased the interorganizational complexity of integration programs. Sentiment against the proliferation of system peculiar equipment has served to make commonality an important program consideration.

Forced to consider more interfaces, the program manager is discovering a need to go beyond the proven methods of integrating the physical and functional aspects of hardware. Joint or complimenting program direction, mutual funding agreements, multi-program reporting, and joint testing have become necessary considerations in many of today's major weapon system programs. In effect, the interface management job has taken on most of the characteristics of basic program management.

Conclusion

It becomes useful to approach major interface management tasks as interface management programs. Recalling the concept of the physical/

functional interface as presented in Chapter I, we can now modify that concept as depicted in Figure 3. From this viewpoint, the interface manager is seen to have a program within two interfacing programs. Positioning the manager in system program office "A" as an example, he has a complete interface program to manage. In the fundamental sense, he is responsible for maintaining an optimum balance of cost, schedule and performance for his interface program (the inner circle). This report has attempted to show that many of the common concerns and problems of program management will be present within that smaller circle.

What is also apparent from Figure 3 is that the interface program has three distincitve parts. Part 1 will include areas peculiar to system A, and will be subject to maximum control by the interface manager who resides in that system program office. The middle part (cross-hatched) will be common to both systems A and B and subject to less control because of the necessity to satisfy mutual program requirements. Part 3 being peculiar to system B, represents the minimum control portion to the system A manager. But all sections are part of the interface program. Problems in any one will affect the entire program. No part can be neglected because of lack of control. In fact, the least controllable portion will at times, demand the most management attention and innovation. The final conclusion then, is that Figure 3 can be a model for interface management. First, it reveals that an interface requirement is really a mini-program within two or more interacting programs,

requiring the application of most of the fundamentals of good program management. Lastly, it presents the concept of three distincitive levels of control. And control is the essense of any interface management approach.

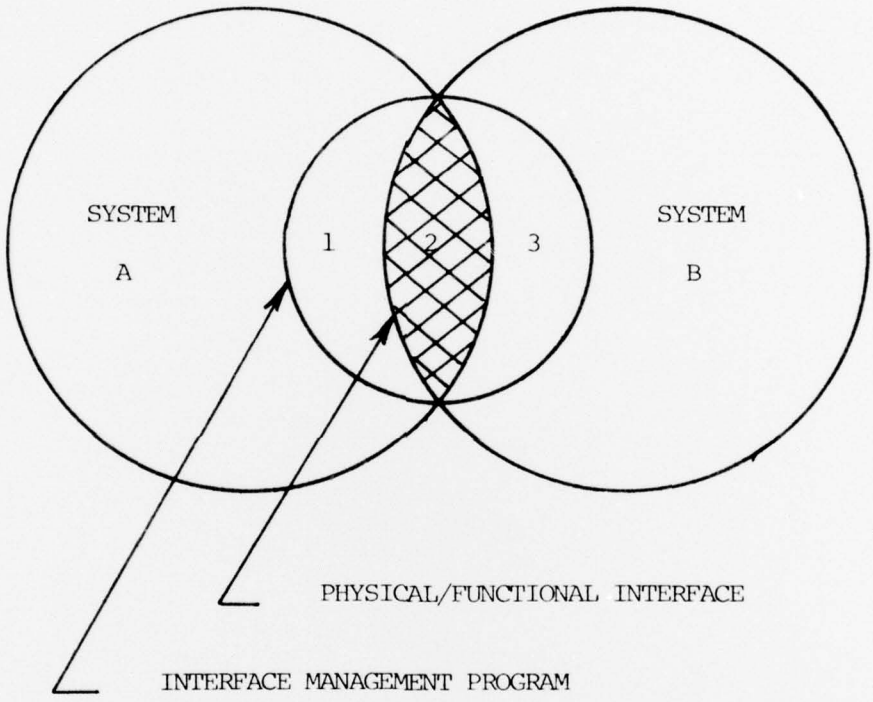

FIGURE - 3

TOTAL INTERFACE MANAGEMENT

BIBLIOGRAPHY

1. Department of the Air Force. Headquarters Air Force Systems Command, Acquisition Management: A Guide for Program Management, AFSC Pamphlet 800.3, Andrews Air Force Base, MD, 9 Arpil 1976.

2. U.S. Department of Defense. Major System Acquisitions, DODD 5000.1, Washington, D.C., 18 January 1977.

3. Defense Systems Management School. Introduction to Military Program Management, LMI Task 69-28, Fort Belvoir, Virginia, March 1971.

4. McDonnell Aircraft Company. Aircraft/Standard Missiles and Ordnance Interface Program Plan. Document No. A030AC. 15 December 1969.